Challenged: Predators appear to reduce the numbers of crown-of-thorns starfish maturing in reef areas where fishing does not occur. (Photo: Horizon International Images Limited/Alamy.)

Lyme Bay, in the south-west of the country. The marine environment here represents one of the most diverse and species-rich around the country, and the measures are planned to stop damage to coral reefs by scallop dredging within the bay. While the dredgers are clearly unhappy, others hope the move will mark economic benefits for other users of these waters and fishermen outside the zone.

And Britain's marine environment may receive another benefit: the country is planning the world's largest array of offshore windfarms which effectively prevent fishing within their areas. Trawlers are not able to operate between the turbines so species in these areas are effectively protected and the concrete bases of the turbines act as an artificial 'reef'. Some of Britain's most overfished coastal regions could soon be seeing effects similar to those created by the Great Barrier Reef Marine Park.

Q & A

Robert A. Hinde

*Having taken BAs in Zoology at Cambridge and London Universities, Robert Hinde did a DPhil at Oxford, his thesis being a field study of the behaviour of the Great Tit (*Parus major*). He then (1950) helped W.H. Thorpe establish the Ornithological Field Station (later sub-Department of Animal Behaviour) at Madingley, Cambridge University, initially as Curator and later as Royal Society Research Professor and Honorary Director of the Medical Research Council Unit on the Development and Integration of Behaviour. Starting as an ethologist under the influence of Niko Tinbergen, his work has been characterised by attempts to integrate insights from the various behavioural sciences, ranging from physiology to anthropology. He retired in 1989, but has been busy since then using his experience in the behavioural sciences to write on human relationships, the nature of religion and morality, and war. In the last three decades he has been active in attempts to abolish nuclear weapons and to convince people that war is not a sensible way to settle disputes.*

Overall, how do you see your research career? I have moved from bird behaviour, through experiments with monkeys to studies of pre-school children and interpersonal relationships, and more recently to studies of the nature of war and finally to attempts to understand the sources and nature of religion and morality. Sometimes I feel I have been a butterfly, flitting from problem to problem and never following anything through to its ultimate conclusion. But I believe that research needs not only detailed analytical studies continued by further analytical studies of the products of the analysis and so on, but also studies that take a broader, cross-disciplinary perspective. I have had a lot of fun with the latter. Throughout my career I have endeavoured to move towards research problems relevant to human well-being.

What aspects of your career have been especially helpful to the development of your research? First, in the early part of my career, team work in research was less essential

than it is now. Neither my research supervisor (David Lack) nor my post-doc mentor (W.H. Thorpe) pressed me to take on a project close to their own work; they allowed me to do what interested me.

Second, I have been much influenced by two discussion meetings/conferences. One was a conference organized by Frank Beach in the Behavioural Sciences Center at Stanford. The aim was to bring together ethologists from Europe and comparative psychologists from the USA. The duration was several weeks, so if you did not finish what you had to say on a given day, there was always Dinah's Shack in the evening and the next day. And we did not have to publish anything. It was there that I met Danny Lehrman and Jay Rosenblat, who became two of my closest friends.

Even more important to me were John Bowlby's weekly discussion meetings. The group was heterogeneous, containing psycho-analysts from two schools, a Hullian learning theorist, a Skinnerian learning theorist, a Piagetian, sometimes an anti-psychiatrist, a psychiatric social worker and myself as an ethologist . We discussed cases of mother–child relationships brought up by the social worker and drafts of John's papers and books. It taught me that the theoretical approach must take second place to the data. The third important factor was my appointment as a Royal Society Research Professor in 1963. This protected me from teaching outside my own interests and restricted any administrative chores.

What part has luck played in your work? A great deal, but it is difficult to know where to start. In World War II, I was lucky to be posted to Coastal Command when I finished my pilot's training; the casualties were very much higher in Bomber Command. It also meant that I came through the war without having killed anyone — a major piece of good fortune.

After the war I came to Cambridge and read Natural Sciences (Zoology). I spent a great deal of my time bird watching on the sewage farm, a wonderful place for migrant waders. There I was lucky enough to find a bird breeding that had never bred in UK before — *Lusciniola melanopogon*. This brought a number of prominent ornithologists to Cambridge to confirm the identification (which 60 years later has been called into question) and put me in touch with David Lack. He offered me a job as assistant/research student in the Edward Grey Institute in Oxford. Soon after I got there, Niko Tinbergen came to Oxford: since he had no students of his own at that time, I could spend a lot of time with him, and he became a major influence on my work. A textbook '*Animal Behaviour*' (1966, 1970) was originally conceived as a joint enterprise with Tinbergen, but in the end he was unable to take part.

The next piece of luck came with an offer, from W.H. Thorpe, of the Curatorship of a new 'Ornithological Field Station' at Madingley, Cambridge. The position had previously been turned down by R.E. Moreau (the editor of *Ibis*) and Konrad Lorenz. This grew into the sub-Department of Animal Behaviour, and played a not inconsiderable part in the development of Ethology. In the 1950s, money was much easier to obtain than it is now. The US Air Force supported an assistant for six years for work on canary nest-building (the officer in charge insisted that I say I had been a pilot, to show its relevance to air force goals). Another application to a US Foundation elicited a response one would never get nowadays: I was told I had not asked for enough money and could I use twice as much? It seemed as though I had been born at the right time for a research career.

During this period I did a little work on imprinting: this resulted in contact with John Bowlby, a London psychoanalyst interested in the effects of separating a baby from its mother on the personality development of the baby. He invited me to join his discussion group (mentioned above) and eventually helped me to set up a rhesus monkey colony to study the effects of separation experimentally. This was some help to Bowlby in getting restrictions on parental visits to children in hospital removed, and an ethological approach was incorporated into his attachment theory.

Louis Leakey, palaeontologist and anthropologist, speculated that much could be learned about human origins from studies of the Great Apes. He launched Jane Goodall, and later Dian Fossey, on studies of chimpanzees and gorilla, respectively. Because I had learned a little about non-human primates, I was asked to supervise their work for PhDs. This gave me an excuse to spend several visits to their camps and have much enjoyment watching these wonderful animals without doing the hard work. Subsequently I supervised other students doing research on African animals ranging from red colobus to elephants.

I could go on in this way, detailing my good fortune in being able to associate with so many leading researchers, such as Frank Beach, Harry Harlow, Jerry Kagan, Gerard Baerends, Jan van Iersel and so on. Partly it has been a result of being in ethology in its early days — a very exciting time. One of the best things that happened to me was being turned down for a teaching job in a somewhat sterile psychology department: it would have crippled my research. And I have been extraordinarily fortunate in my graduate students; I certainly feel I have learned as much from them as they from me.

What is your present view of ethology? Few things can be more exciting than watching animals in their natural environments. Every new study reveals more marvels. A sound knowledge of its natural behaviour is essential for work with every species. But theoretically, I suspect ethology has little to give. For instance, I find it difficult to see the value of the complex nomenclature being proposed for aspects of human behaviour. Many of the original theoretical concepts have proved to be superficial or wrong. Lorenz's proposed 'innate-releasing mechanism' was neither innate, nor necessarily releasing, nor a unitary mechanism; and so on. That is not unusual in the development of science: Freud was wrong about the death wish, Darwin about the inheritance of acquired characteristics, Jeffreys about tectonic plates. Initiators are almost bound to be wrong some of the time. But Tinbergen and Lorenz started something very important, other ethological concepts have been invaluable, and the orienting attitudes of ethology have penetrated many other disciplines from physiology to anthropology. My own work on the nature of human morality has been crucially influenced by the need for description to precede explanation, and for complete explanation to include answers to the four questions of causation, development, function and evolution.

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